ABSTRACT

Antisense oligonucleotide gene therapy selective for the 5' region of PDGFR-β subunit mRNA was used in attempt to prevent intimal thickening following rat carotid arterial injury. Sustained perivascular application of the antisense oligomers for 14 days reduced PDGFR-β protein overexpression and prevented neointima formation by 80%. Alternatively, a bolus of antisense oligomers reduced the PDGFR-β protein expression by at least 90% for at least 28 days. Specificity was verified by the absence of effects on the expression of a non-targeted gene PDGFR-α. These data demonstrated that antisense oligonucleotide sequences can effectively suppress a growth factor receptor, and the reduction of intimal hyperplasia after injury correlates with the extent to which these oligomers inhibited PDGFR-β protein expression. Advantageously, reduction of intimal hyperplasia was also accomplished with an almost completely restored endothelial function. Methods and materials useful for preventing restenosis are described and claimed.